Water Wells - Planning and Design

Guiding Principles:

- All relevant factors should be considered in siting and design of wells and septic systems
- Natural or alternative sewage treatment systems should be considered in order to reduce costs and potential for contamination
- Closed cycle' systems whereby water initially used for human consumption is recycled for use in landscaping.
- Water conservation techniques to decrease water use and reduce operational costs should be instituted
- Hard surfaces should be minimized to reduce run-off and allow for sufficient water absorption
- A hydrological survey of water resources along the coast should be carried out to establish a scientific base for planning of tourism facilities

Technical Guidance:

Siting and Design of Water Wells

Knowledge of the site and careful siting and design of water delivery systems can ensure a consistent supply of fresh water and minimize potential for contamination. The following steps should be followed in the planning stage

1. Locate water sources and determine water needs. Identify sources of fresh water on-site or nearby and estimate demand for water during construction and operation at full capacity, taking into account seasonal fluctuations in rainfall and tourist arrivals.

2. Identify and locate potential sources of contamination. Possible sources include pit latrines, industrial wastewater, septic tanks, run-off during heavy rains or fertilizers from agricultural activities.

Source: Tanzania Ministry of Natural Resources & Tourism. 2003. *Guidelines for Coastal Tourism Development in Tanzania.* Tanzania Coastal Management Partnership.

3. Conduct a hydrological survey prior to drilling. This study will help determine the optimal location and depth of well or borehole. It is recommended that studies be conducted in the dry season to establish the lower limits of water availability.

4. Design wells to eliminate intrusion of contaminants and salt water. One inexpensive and effective method is to install a horizontal tube at the bottom of the vertical pipe. This ensures that fresh water flows horizontally into the wellhead.

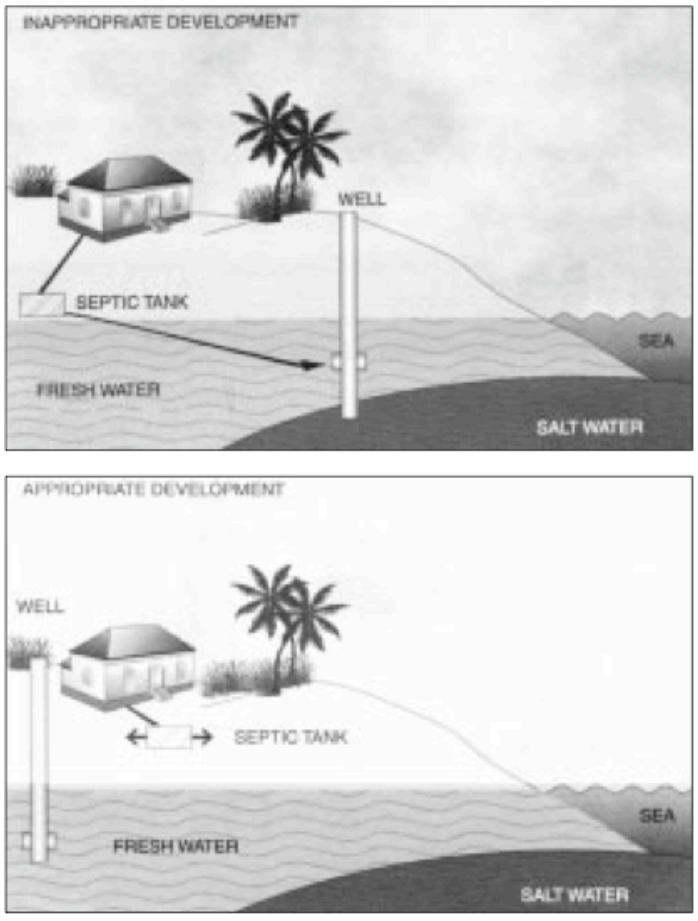

Fig. 5 Diagram of water well with horizontal tube
Siting and Design of Septic Systems